IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Currently Amended) An electromagnetic wave generator comprising:

a first pump beam emitter including a first pump source implemented by ~~one of~~ a first Cr-doped forsterite laser ~~and an ytterbium-doped yttrium-lithium-flouride laser~~, configured to emit a first pump beam having a wavelength larger than one micrometer;

a second pump beam emitter including a second pump source implemented by ~~one of~~ a second Cr-doped forsterite laser ~~and an ytterbium-dope yttrium-lithium-fluoride laser~~, configured to emit a wavelength-tunable second pump beam having a wavelength larger than one micrometer, the wavelength of which is different from the wavelength of the first pump beam;

a nonlinear optical crystal having an electromagnetic wave exit face, configured to generate an electromagnetic wave of a difference frequency between the first and second pump beams and to emit the electromagnetic wave from the electromagnetic wave exit face; ~~and~~

an optical system configured to irradiate the first and second pump beams to the nonlinear optical crystal, by adjusting an external intersection angle between the first and second pump beams within 0.5°at the difference frequency of 1 THz, and

an angle control mechanism configured to rotate the nonlinear optical crystal so as to control an angle of the electromagnetic wave exit face against an optical axis of the first pump beam,

wherein a frequency-tunable terahertz electromagnetic wave, tunable over a wide frequency band spanning from 0.5 to 7 THz, is ~~generated in the nonlinear optical crystal~~ emitted from the electromagnetic wave exit face, by changing the frequency of the second

pump beam, being linked with the change of the external intersection angle and the change of the angle of the electromagnetic wave exit face.

Claims 2 (Original) The electromagnetic wave generator of claim 1, wherein the nonlinear optical crystal is GaP crystal, $ZnGeP_2$ crystal, or GaSe crystal.

Claim 3 and 4. (Cancelled)

Claim 5. (Previously Amended) The electromagnetic wave generator of claim 1, further comprising an excitation light source configured to excite the first and second pump sources so as to emit the first and second pump beams from the first and second pump sources, respectively.

Claim 6. (Original) The electromagnetic wave generator of claim 5, further comprising a timing control mechanism configured to control arrival timings of pulses of the first and second pump beams to the nonlinear optical crystal.

Claim 7. (Currently Amended) An electromagnetic wave generator comprising:

a first pump beam emitter including a first pump source implemented by a first Cr-doped forsterite laser, configured to emit a first pump beam;

a second pump beam emitter including a second pump source implemented by a second Cr-doped forsterite laser, configured to emit a wavelength-tunable second pump beam, the wavelength of which is different from the wavelength of the first pump beam; and

a nonlinear optical crystal having an electromagnetic wave exit face, including one of a GaP crystal and a $ZnGeP_2$ crystal, configured to generate an electromagnetic wave of a

difference frequency between the first and second pump beams[[,]] and to emit the electromagnetic wave from the electromagnetic wave exit face; and

an angle control mechanism configured to rotate the nonlinear optical crystal so as to control an angle of the electromagnetic wave exit face against an optical axis of the first pump beam,

wherein a frequency-tunable terahertz electromagnetic wave, tunable over a wide frequency band spanning from 0.5 to 7 THz, is ~~generated in the nonlinear optical crystal~~ emitted from the electromagnetic wave exit face, by changing the frequency of the second pump beam.

Claim 8 - 9. (Cancelled)

Claim 10. (Currently Amended) An electromagnetic wave generator comprising:

a first pump beam emitter including a first pump source implemented by a first Cr-doped forsterite laser, configured to emit a first pump beam;

a second pump beam emitter including a ~~first~~ second pump source implemented by ~~one of~~ a second Cr-doped forsterite laser ~~and an ytterbium-dope yttrium-lithium-fluoride laser~~, configured to emit a wavelength-tunable second pump beam, the wavelength of which is different from the wavelength of the first pump beam;

a nonlinear optical crystal having an electromagnetic wave exit face, configured to generate an electromagnetic wave of a difference frequency between the first and second pump beams and to emit the electromagnetic wave from the electromagnetic wave exit face;

an optical system configured to irradiate the first and second pump beams to the nonlinear optical crystal, by adjusting an external intersection angle between the first and second pump beams; [[and]]

an angle control mechanism configured to rotate the nonlinear optical crystal so as to control an angle of the electromagnetic wave exit face against an optical axis of the first pump beam; and

a timing control mechanism configured to control arrival timing of pulses of the first and second pump beams to the nonlinear optical crystal,

wherein a frequency-tunable terahertz electromagnetic wave, tunable over a wide frequency band spanning from 0.5 to 7 THz, is ~~generated in the nonlinear optical crystal~~ emitted from the electromagnetic wave exit face, by changing the frequency of the second pump beam, being linked with the change of the external intersection angle and the change of the angle of the electromagnetic wave exit face.

Claim 11. (Cancelled) .

Claim 12. (Previously Presented) The electromagnetic wave generator of claim 10, wherein the timing control mechanism controls the timing by adjusting time lag between excitation light pulses configured to excite the first and second light sources, respectively.

Claim 13. (Previously Presented) The electromagnetic wave generator of claim 10, wherein the timing control mechanism comprises a double pulse YAG laser including:

a first YAG rod configured to excite the first pump source; and

a second YAG rod configured to excite the second pump source, wherein the timing is controlled by adjusting time lag between an excitation light pulse from the first YAG rod and another excitation light pulse from the second YAG rod.

Claim 14. (Original) The electromagnetic wave generator of claim 10, further comprising:

a beam splitter configured to divide a beam of terahertz electromagnetic wave being emitted from the nonlinear optical crystal; and

a feedback detector configured to feed back detected output to the timing control mechanism, by detecting an intensity of the divided beam,

wherein the timing control mechanism controls the timing so as to maximize the detected output.

Claim 15. (Currently Amended) An electromagnetic wave generator comprising:

a first pump beam emitter including a first pump source implemented by ~~one of~~ a first Cr-doped forsterite laser ~~and an ytterbium-doped yttrium-lithium-fluoride laser~~, configured to emit a first pump beam;

a second pump beam emitter including a second pump ~~souce~~ source implemented by ~~one of~~ a second Cr-doped forsterite laser ~~and an ytterbium-doped yttrium-lithium-fluoride laser~~, configured to emit a wavelength-tunable second pump beam, the wavelength of which is different from the wavelength of the first pump beam;

a nonlinear optical crystal having an electromagnetic wave exit face, configured to generate an electromagnetic wave of a difference frequency between the first and second pump beams, and to emit the electromagnetic wave from [[an]] the electromagnetic wave exit face;

an optical system configured to irradiate the first and second pump beams to the nonlinear optical crystal, by adjusting an external intersection angle between the first and second pump beams; and

an angle control mechanism configured to rotate the nonlinear optical crystal so as to control an angle of the electromagnetic wave exit face against an optical axis of the first pump beam,

wherein a frequency-tunable terahertz electromagnetic wave, tunable over a wide frequency band spanning from 0.5 to 7 THz, is emitted from the electromagnetic wave exit face, by changing the frequency of the second pump beam, being linked with the change of the external intersection angle and the change of the angle of the electromagnetic wave exit face.

Claim 16. (Original) The electromagnetic wave generator of claim 15, further comprising:

a first off-axial paraboloid reflector configured to reflect the electromagnetic wave emitted from the electromagnetic wave exit face;

a second off-axial paraboloid reflector configured to move on a linear stage against the first off-axial paraboloid reflector, reflecting the electromagnetic wave reflected by the first off-axial paraboloid reflector; and

a position controller configured to control position of the second off-axial paraboloid reflector so that the electromagnetic wave emitted with a specific exit angle against the electromagnetic wave exit face can focus into an arbitrary point, irrespective of the exit angle.

Claim 17. (Original) The electromagnetic wave generator of claim 15, further comprising:

a rotatable first incident mirror configured to reflect the first pump beam so as to adjust an incident angle with which the first pump beam irradiates to the nonlinear optical crystal;

a rotatable second incident mirror configured to reflect the second pump beam so as to adjust another incident angle with which the second pump beam irradiates to the nonlinear optical crystal;

a terahertz-generator rotation stage on which the first and second incident mirrors are mounted, configured to turn around on an exit point, defining the exit point as a central axis of the rotation,

wherein the electromagnetic wave emitted with a specific exit angle against the electromagnetic wave exit face is controlled to focus into an arbitrary point, irrespective of the exit angle, by rotating the terahertz-generator rotation stage.

Claim 18. (Original) The electromagnetic wave generator of claim 15, wherein the nonlinear optical crystal is any one of GaP crystal, $ZnGeP_2$ crystal, and GaSe crystal.

Claims 19 and 20. (Cancelled)